REMARKS

Claims 1-17 and 22-24 have been cancelled as directed to a non-elected invention. Claim 18 has been amended. Claims 18-21 are now pending in this application. Support for the amendments is found in the existing claims and the specification as discussed below. Accordingly, the amendments do not constitute the addition of new matter. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the amendments and the following remarks.

Election/Restriction

The Examiner's withdrawal of the restriction between SEQ ID NOS: 21 and 22 is gratefully acknowledged. With this amendment, non-elected claims have been cancelled. Applicant specifically reserves the right to pursue these claims in one or more divisional applications.

Abstract

A revised Abstract on a separate sheet is included herewith.

Sequence Rules Compliance

The legends for Figures 4 and 5 have been amended to include SEQ ID NOS. It is respectfully submitted that the specification is now in compliance with the sequence rules.

Claim objection

Claim 18 is objected to for referring to non-elected claim 16. Claim 18 has been amended to recite the elected probe sequences. In view of Applicant's amendment, withdrawal of the objection is respectfully requested.

Rejection under 35 U.S.C. § 103(a)

Claims 18-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Critchley (WO 02/072875) and Buck, et al. (1999) as evidenced by Froguel, et al. (1993) and Howell, et al. (1999).

The presently claimed invention is directed to a method for detecting a mitochondrial DNA 3243 mutation using a nucleic acid probe having a nucleotide sequence complementary to a nucleotide sequence starting from the nucleotide position 230 in the nucleotide sequence of SEQ ID NO: 2, where the 3' end of the probe is a cytosine corresponding to nucleotide position 230 and is labeled with a fluorescent dye.

Critchley teaches methods for detecting mitochondrial DNA 3243 mutation and describes sequences, such as a 480 base pair fragment, which include SEQ ID NOS: 21 and 22. However, Critchley does not specify SEQ ID NOS: 21 or 22. Furthermore, Critchley does not teach more generally probes having the advantage of a nucleotide sequence complementary to a nucleotide sequence starting from position 230 in SEQ ID NO: 2 where the 3' end of the probe is a cytosine corresponding to the nucleotide position 230 and is labeled with the fluorescent dye.

Although Buck, et al. teach design strategies and performance of sequencing primer and suggests that almost all the equivalents of primers work as a sequencing primer, the disclosure of Buck, et al. is directed to purified primers and templates and provides no basis to extend this teaching to complex mixtures of molecules. As concluded by Buck et al., "We conclude that under ***optimal*** sequencing conditions with ***highly pure*** template and primer, many of the commonly applied primer design parameters are dispensable..." (Buck, et al., page 528, second column, lines 4-8 from bottom, emphasis added). When the type of gene is different, all primers are not necessarily equivalent. In the present application, a probe according to the claimed invention (3FL-mtR2-17; SEQ ID NO: 22-see Table 9) was able to distinguish mutant and wild type sequences in a mixed sample (see present specification, page 29, last paragraph and Figure 6). Buck, et al. do not teach that all probes would be equivalent when distinguishing single point mutations in a mixed sample by a Tm analysis as in the present case.

Accordingly, none of the cited references suggests a method for detecting the mitochondrial DNA 3243 mutation by using a nucleic acid probe having a nucleotide sequence complementary to a nucleotide sequence starting form the nucleotide position 230 in the nucleotide sequence of SEQ ID NO: 2, where the 3' end of the probe is a cytosine corresponding to nucleotide position 230 and labeled with a fluorescent dye.

Among many possible probes for detection of the mitochondrial DNA 3243 mutation, Applicant has discovered that a nucleic acid probe with the 3' end as cytosine corresponding to

position 230 as shown in SEQ ID NO: 2 is important. Specifically, as shown in Figure 5, the probes of the present invention (i.e., SEQ ID NOS: 21 and 22) were able to detect the mitochondrial DNA 3243 mutation, while other probes could not (Figure 4). This further refutes the evidence of Buck, et al. regarding equivalence of probes, at least for Tm analysis. The specification describes that only when the probes 3T-mt-R2-18, 3T-mt-R2-17, 3FL-mt-R2-18 and 3FL-mt-R2-17 (probes corresponding to SEQ ID NOS: 21 and 22, see Table 9) were used, changes in fluorescence intensity that could be analyzed by Tm analysis were observed (present specification, page 29, lines 2-5).

One of ordinary skill in the art would not have recognized the importance that the 3' end of the probe should be a cytosine corresponding to nucleotide position 230 of SEQ ID NO: 2, based on the cited references which do not specify SEQ ID NOS: 21 and 22.

The importance of the nucleotide position 230 was discovered by Applicant and was not easily achieved. Applicant takes the position that the invention as claimed could not have been achieved by one of ordinary skill in the art based upon the cited references.

In view of Applicant's arguments, reconsideration and withdrawal of the above ground of rejection is respectfully requested.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

Co-Pending Applications of Assignee

Applicant wishes to draw to the Examiner's attention to the following co-pending applications of the present application's assignee. Application in **bold** corresponds to the above-referenced application.

Serial Number	Title	Filed
09/817,251	METHOD FOR STIRRING LIQUIDS	03/27/01
10/466,453	QUANTITATIVE ANALYZING METHOD AND QUANTITATIVE ANALYZER USING SENSOR	12/02/03
10/481,397	INFORMATION COMMUNICATION SYSTEM	12/19/03
10/483,205	ADJUSTABLE LANCING DEVICE	01/07/04
10/493,919	TEST APPARATUS	04/27/04
10/862,465	METHOD AND IMPLEMENT FOR OPENING HOLE IN SOFT MATERIAL	06/08/04
10/498,782	SAMPLE MEASURING DEVICE	06/10/04
10/533,601	ANALYTICAL TOOL	04/29/05
10/545,852	METHOD OF DETECTING CHLAMYDIA TRACHOMATIS AND KIT THEREFOR	08/17/05
10/547,354	DNA AMPLIFICATION METHOD AND KIT THEREFOR	08/29/05
11/220,622	SUPPLEMENT FOOD FOR LOW BLOOD GLUCOSE RECOVERY	09/08/05
10/553,576	**METHOD OF DETECTING OR QUANTITATIVELY DETERMINING MITOCHONDRIAL DNA 3243 VARIATION, AND KIT THEREFOR**	**10/17/05**
10/536,822	METHOD AND APPARATUS FOR CONCENTRATION AND PURIFICATION OF NUCLEIC ACID	10/18/05
10/553,509	METHOD OF DETECTING B3 ADRENALINE RECEPTOR MUTANT GENE AND NUCLEIC ACID PROBE AND KIT THEREFOR	10/18/05
10/553,614	METHOD OF DETECTING PANCREATIC ISLET AMYLOID PROTEIN MUTANT GENE AND NUCLEIC ACID PROBE AND KIT THEREFOR	10/18/05
10/553,376	METHOD OF ISOLATING NUCLEIC ACIDS, AND KIT AND APPARATUS FOR NUCLEIC ACID ISOLATION	10/19/05
10/536,829	DEVICE FOR PRETREATING SPECIMEN	10/31/05
10/550,671	PROCESS FOR PRODUCING GLUCOSE DEHYDROGENASE	11/09/05
11/587,333	MUTANT GLUCOSE DEHYDROGENASE	10/19/06

CONCLUSION

In view of Applicants' amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: Jan. 23, 2008

By: Che S. Chereskin

Che Swyden Chereskin, Ph.D.
Registration No. 41,466
Agent of Record
Customer No. 20,995
(949) 721-6385